

JC20 Rec'd PCT/PTO SEP 24 2001

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

Mo-6597/LeA 32,853

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

To Be Assigned 09/937409

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/EP00/02239

14 March 2000 (14.03.00)

26 March 1999 (26.03.99)

TITLE OF INVENTION PRESSURE-PROOF PROCESS WINDOW

APPLICANT(S) FOR DO/EO/US WOLF, Udo and SPAUSCHUS, Lutz

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

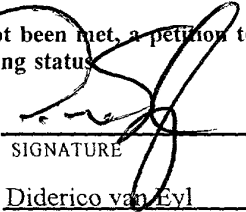
1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

## Items 11 to 20 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information:

Drawings (4 sheets)

Form PTO 1449 w/references

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) <b>To Be Assn. 09/937409</b>		INTERNATIONAL APPLICATION NO. <b>PCT/EP00/02239</b>		ATTORNEY'S DOCKET NUMBER <b>Mo-6597/LeA 32,853</b>	
21. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a) (2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... <b>\$1000.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... <b>\$860.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... <b>\$710.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(I)-(4) ..... <b>\$690.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... <b>\$100.00</b>  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS PTO USE ONLY</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 860.00	
				\$ 0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	9 -20 =	0	x \$18.00	\$	0.00
Independent claims	1 -3 =	0	x \$80.00	\$	0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				\$	270.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$	1,130.00
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$ 0.00	
<b>SUBTOTAL =</b>				\$	1,130.00
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0.00	
<b>TOTAL NATIONAL FEE =</b>				\$	1,130.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). <b>\$40.00</b> per property +				\$ 40.00	
<b>TOTAL FEES ENCLOSED =</b>				\$	1,170.00
				<b>Amount to be refunded:</b>	\$
				<b>charged:</b>	\$
a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed.  b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <u>13-3848</u> in the amount of \$ <u>1,170.00</u> to cover the above fees. A duplicate copy of this sheet is enclosed.  c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>13-3848</u> . A duplicate copy of this sheet is enclosed.  d. <input type="checkbox"/> Fees are to be charged to a credit card. <b>WARNING:</b> Information on this form may become public. <b>Credit card          information should not be included on this form.</b> Provide credit card information and authorization on PTO-2038.					
<b>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR          1.137 (a) or (b)) must be filed and granted to restore the application to pending status.</b>					
SEND ALL CORRESPONDENCE TO					
 _____ SIGNATURE  Diderico van Eyl _____ NAME  38,641 _____ REGISTRATION NUMBER					

Date of Deposit September 24, 2001

**JC16 Rec'd PCT/PTO SEP 24 2001**  
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231

Dorothy P. Colangelo

(Name of person mailing paper or fee)

Dorothy P. Colangelo

(Signature of person mailing paper or fee)

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4/pstb

**Pressure-resistant process window**

The invention relates to a pressure-resistant process window for in-process  
5 monitoring for visual or spectroscopic investigation of pressurized products in  
pipes and reactors. The process window consists at least of a measurement-cell  
body connected to the pipe or the reactor, and a transparent window pane, a seal  
between the measurement-cell body and a window pane for sealing the reactor or  
pipe interior off from the environment, where the window pane is held against the  
10 measurement-cell body in a sealing manner by means of a screw barrel with an  
external thread which can be screwed into a hollow barrel with internal thread  
which is connected to the measurement-cell body.

Chemical production processes can be controlled efficiently if the current  
15 composition or quality of the product or of a reaction mixture is known at various  
stages of the production process. The requisite quality-relevant parameters can be  
determined with the aid of continuous on-line methods.

A particular key position in the determination of these parameters is held by  
20 spectroscopic methods, since these are able to determine current product properties  
without complex modification or treatment of the product being necessary.

The usual spectroscopic methods in this connection are UV/VIS spectroscopy  
(measurement of the absorption of the product in the wavelength range  $\lambda = 200$ -  
25 800 nm), NIR spectroscopy (measurement of the absorption of the product in the  
wavelength range  $\nu = 800$ -2500 nm), IR spectroscopy (measurement of the  
absorption of the product in the wave number range  $\nu = 4000$ -400  $\text{cm}^{-1}$ ) and  
fluorescence and Raman spectroscopy (excitation of fluorescence or Raman  
radiation by means of intense light sources).

An essential prerequisite for the usability of these methods is access to the process  
30 or product to be examined. Chemical processes are generally carried out in  
reaction tanks or pipes, which only allow spectroscopic measurement of the  
product therein after installation of windows which are transparent to the  
35 spectroscopic analysis radiation.

Due to possible toxic properties of the products to be analyzed in the process, high  
demands must be made of the reliability of process windows with respect to the

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leaks. This also applies in particular if processes are carried out under high pressure or high temperature.

Process windows of this type are available, for example, as inspection glasses.

- 5 Inspection glasses are designed principally for visual monitoring of the reactor or pipe contents, less for spectroscopic process applications, in which a layer thickness, adjustable in a defined manner, of a product through which radiation is to be passed is required so that the desired product information can be derived from the spectrum.

10

Process windows for spectroscopic applications as part of an in-line measurement cell are described in the brochure from Optec-Danulat GmbH, D-45143, Essen, In-line photometry system overview 4.O, page 9 (corresponding to German Utility Model G 87 17 609.2). In these, stepped windows made of Pyrex or sapphire are

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pressed by means of a window ring against the window in contact with the product, which is sealed off from the product to be analyzed by means of an O-ring. The window ring is screwed to the measurement cell 1 by means of four screws. The pressure resistance of this known process window is essentially determined by the tensile strength and stripping force of the four clamping screws.

20

The pressure resistance of this process window is inadequate for many potential applications.

A further process window is from US 4 910 403. Here, a diamond window is soldered to a support which can be screwed in. This is designed, in particular, to be

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screwed into a standard pressure sensor port of an extruder. The typical diameter of the diamond window is 4.25 mm. If higher optical throughput is to be facilitated, the diameter of the diamond window has to be increased, which can result in very high material costs. A further disadvantage is the higher number of sealing surfaces required.

30

A sapphire window which has been soldered into a support is described analogously in the patent US 5,151,474 of The Dow Chemical Company. Here too, it is problematic to implement greater diameters of the sapphire window in order to achieve higher optical throughput, since the soldering process is ever more

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difficult to carry out with increasing diameter. The unsatisfactory chemicals resistance of the solder to aggressive acids or lyes can also make the use of this technique for monitoring chemical processes impossible.

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The object of the invention was to develop a process window which does not have the design disadvantages of the known arrangements, and in particular exhibits high pressure resistance and freedom from leaks over an extended operating period.

5

The object is achieved by a pressure-resistant process window for visual or spectroscopic examination of pressurized products in pipes and reactors, which is the subject-matter of the invention, consisting at least of a measurement-cell body connected to the pipe or the reactor, and a transparent window pane, a seal  
10 between the measurement-cell body and a window pane for sealing the reactor or pipe interior off from the environment, characterized in that the window pane is held against the measurement-cell body in a sealing manner by means of a screw barrel with an external thread which can be screwed into a hollow barrel with internal thread which is connected to the measurement-cell body.

15

A preferred embodiment of the process window is designed in such a way that the hollow barrel has an annular sealing surface on which the window pane lies in a pressure-tight manner.

20

A particularly pressure-stable embodiment of the process window is designed in such a way that the hollow barrel is formed in one piece with the measurement-cell body or is welded thereto.

25

In a preferred variant of the process window, the hollow barrel is connected to the measurement-cell body in a pressure-resistant and detachable manner.

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The process window may be designed in such a way that a ring of low friction to the barrel or the window pane is present between the screw barrel with external thread and the window pane and facilitates a pressure-resistant screw connection which is gentle on the window pane.

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The window pane of the process window preferably has a greater wall thickness in the central region. This results in the formation of a bearing surface for, for example, ring seals. In addition, the reduction in the size of the side of the window pane in contact with the product achieves a reduction in the dead space (between the pipe wall and the window pane).

The ring between the screw barrel with external thread and the window pane preferably consists of graphite.

5 In a preferred variant of the process window, two rings which are in sliding contact with one another are present instead of a ring with low friction between the screw barrel with external thread and the window pane.

10 Examples of suitable materials for the transparent window pane are the materials which are basically known for the production of inspection glasses or spectroscopic windows, such as borosilicate glass, quartz or sapphire, which exhibit no or low absorption in the region of the typical relevant wavelengths mentioned at the outset for optical spectroscopy. In the case of glass, they can be produced in accordance with DIN 7080, 7081, 8902 and 8903 standards, so that they have official approval for the selected pressure range in accordance with the pressure container regulation (AD-N4). Such glasses are described, for example, in the brochure of "Technische Glaswerke Ilmenau GmbH", D 98684 Ilmenau.

20 The use of the process window is possible, without any claim to completeness, for the spectroscopic or visual determination of the chemical composition, substance identity, mixture analysis, purity of the substances flowing through the pipe or the reactor, and characteristic numbers, such as, for example, OH and acid numbers (NIR spectroscopy), for the determination of colour (VIS spectroscopy), for the determination of particle impurities or solids contents (scattered-light measurements) or for the visual inspection of the substances (with the eye or by means of a camera).

30 In the case of transmitted radiation measurement through a pipe, two of the windows according to the invention are installed opposite one another. It may then be necessary to increase the thickness of the installed window panes to the inside in order to reduce the absorption of the measurement radiation by the product.

35 Materials which are basically suitable for the window pane for the UV (200-400 nm), visible (400-800 nm), near infrared (800-2500 nm) and infrared (4000-400 cm<sup>-1</sup>) spectral region are described in the book Bauelemente der Optik [Optical Components], 5<sup>th</sup> Edition by G. Schröder, Hanser-Verlag 1987, ISBN 3-446-14960-0.

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For use in the UV spectral region, emphasis should be placed on materials such as quartz, Suprasil quartz glass and sapphire, and the speciality glasses from Schott FK 5, UBK 7, UK 50 and BaK 2 (Schott Glaswerke, Hattenbergstraße 10, Mainz: optical glass, glass mouldings, radiation-protection glasses and windows).

5

Preferred window materials for use in the visible spectral region are sapphire, quartz, Pyrex glass and zirconium dioxide.

10 Preferred window materials for use in the near infrared spectral region are sapphire, zirconium dioxide and quartz.

Preferred window materials for use in the IR spectral region are zinc sulphide (ZnS), zinc selenide (ZnSe) and germanium (Ge).

15 Basically, all window materials are suitable which have adequately high transmission, strength, heat and chemicals resistance in the specific application.

The seals used for the process window can be either flat seals or O-ring seals.

20 The O-ring seal is preferably not located in an annular groove (for manufacturing regions), but in a turned-out projection of the measurement-cell body. The depth of the projection is less than the diameter of the O-ring, and the width of the projection is greater than the diameter of the O-ring. By pressing the window against the O-ring or against the measurement-cell body with the aid of the screw  
25 barrel, a prestressing of the O-ring which is necessary for the correct sealing function is generated.

30 On use of flat seals, a groove is usually not provided. For fixing of the seal, a narrow and flat concentric groove or a narrow and flat turned-out projection can be worked into the measurement-cell body. The window is pressed against the seal with the aid of the screw barrel.

35 The choice of sealing material depends on the thermal and chemical load. In particular, use is made of elastic plastics, moulding compositions comprising inorganic fibres and binders, graphite and deformable metals, for example soft copper.

Proven flat-seal materials are:

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PTFE (filled or unfilled, solid material or expanded material (Gore-Tex) with the advantage of very good chemicals resistance and heat resistance up to about 260°C.

- 5 Graphite seals with metal inlay or without inlay (for example HDF-Flexitallic GmbH) with the advantage of heat resistance up to about 480°C.

Proven seal materials are fluorinated elastomers, such as, for example, Kalrez<sup>®</sup> (manufacturer: DuPont de Nemour) and Viton<sup>®</sup> (manufacturer: DuPont de  
10 Nemour) and nitrile rubber or silicone rubber.

Instead of a sliding ring, it is also conceivable to use two rings which are in sliding contact with one another, in particular a so-called axial pressure bearing (ball or roller bearing).

- 15 The process windows according to the invention can also be installed in pairs opposite one another on a pipe.

This enables radiation to pass through a product in the pipe, for example for transmission measurements.

20

The invention furthermore relates to the use of the process window according to the invention for optical or spectroscopic process control, in particular of chemical reactions, and of mixing, conveying and separation processes.

- 25 The invention is explained in greater detail by way of example below with reference to the figures, without thereby restricting the invention in detail.

The figures show the following:

- 30 Figure 1a shows the simplified diagrammatic cross-sectional representation of a conventional process window.

Figure 1b shows the plan view of the known process window according to Fig. 1a.

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Figure 2a shows the simplified diagrammatic cross-sectional representation of a process window according to the invention.



- Figure 2b shows the plan view of the process window according to the invention according to Fig. 2a.
- 5 Figure 3a shows a variant of the arrangement according to Fig. 2a with sliding-ring seal.
- Figure 3b shows the plan view of the process window according to Fig. 3a.
- 10 Figure 4a shows a variant of the process window according to Fig. 2a with extended transmitted-radiation region of the window.
- Figure 4b shows the plan view of the process window according to Fig. 4a

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## Examples

### Example 1 (Comparative Example)

- 5 A conventional process window has the following structure:  
The accommodation bush 11 with the threaded holes 12 is welded into a pipe 13.  
The window pane 14 is pressed against the ring seal 16 by means of a pressure  
sleeve 15. The pressing pressure is generated by means of four threaded screws  
17a to 17d, which are screwed into the threaded holes 12.

10

In the case of this example which is not according to the invention (Fig. 1a and  
1b), the pressure resistance is determined essentially by the tensile strength and  
stripping force of the four threaded screws 17a to 17d. The pressure resistance of  
the arrangement has been calculated by means of the DIMY 4.00/Rev 3 module  
15 FESTFL 4.00 computer program from RW TÜV Essen. If four M5 screws are  
used, the pressure resistance is a maximum of about 15 bar, while if M6 screws are  
used, it is correspondingly a maximum of 42 bar. The pressure resistance is thus  
inadequate for many potential applications.

20

### Example 2

- In a process window 1 according to Fig. 2a and 2b, the accommodation sleeve 7  
with the internal thread 8 is welded into a pipe 13 above the measurement-cell  
body 2. A screw-in sleeve 5, which has an external thread 6, is screwed into the  
25 accommodation sleeve 7. The screw-in sleeve 5 has holes 21 in the head part, into  
which pegs of an Allen key (not shown) are able to engage for screwing together.  
The screw-in sleeve 5 has a planar surface on its underside, which is in contact  
with the window pane 3. The window pane 3 is in the design according to the  
invention (Fig. 2a and 2b) pressed by means of the screw-in sleeve 5 via a ring seal  
30 22 against a seal 4, which sits in an annular groove in the lower, projecting part of  
the accommodation sleeve 7 and seals the interior 10 of the pipe 20 off against the  
environment.

- The pressure resistance of the pressure window resulting from the stripping force  
35 of the screw-in sleeve 5 has been estimated at 1300 bar. The pressure resistance of  
the process window can itself, if sapphire is used as the material for the window  
pane, be estimated at about 450 bar. The window pane 3 here has in cross section

(Fig. 2a) a thickness of 11 mm in the thinner, outer region and a thickness of 16 mm in the thicker, inner region.

5 The advantage of the design according to the invention over the example which is not according to the invention lies in the significantly greater pressure resistance in combination with reduced dimensions of the measurement channel and reduced weight. This results firstly in easier integration of process windows into existing pipes, and improved optical properties are achieved through the length/diameter ratio of the measurement channel 9 being reduced compared with the known  
10 arrangement (Ex. 1).

Figures 3a and 3b show views of a process window of basically the same design as in Fig. 2a, 2b, but in which the O-ring seal 4 with annular groove has been replaced  
15 by a sliding-ring seal with sliding surface.

Figures 4a and 4b show in addition a further variant which can be used in flowing media of high viscosity (polymer melts). The sapphire window 3 here projects well to the inside so that the layer thickness of the product through which radiation passes is reduced. A steel sleeve 23 at the side ensures that the sapphire window  
20 cannot break out. The accommodation sleeve 7 and measurement-cell body here are designed in two parts, so that the inner steel sleeve 7 and the measurement-cell body 2 can be screwed out of the outer steel sleeve 24 together with the window 3.

The particular advantage of this variant is that the window 3, for example after  
25 surface soiling, can be exchanged by screwing it out together with the steel sleeve 2, 7, 23, which is preferably designed in one piece. The outer steel sleeve 24 is welded to the pipe.

In another variant, the window has to be pressed from the inside outward after  
30 screwing-out of the screw-in sleeve 5. However, this is not possible if the window has been installed in a continuous, relatively long piece of a pipe.

**Patent Claims**

1. Pressure-resistant process window 1 for visual or spectroscopic examination of pressurized products in pipes and reactors, consisting at least of a measurement-cell body 2 which is connected to the pipe or the reactor, a transparent window pane 3 and a seal 4 between the measurement-cell body 2 and the window pane 3 for sealing the reactor or pipe interior off from the environment, where the window pane 3 is held against the measurement-cell body 2 in a sealing manner by means of a screw barrel 5 having an external thread 6, which can be screwed into a hollow barrel 7 with internal thread 8 which is connected to the measurement-cell body 2, characterized in that the hollow barrel 7 is connected to the measurement-cell body 2 in a pressure-resistant and preferably detachable manner, and in that the window pane 3 has a greater wall thickness in its central region than in the outer region.
2. Process window according to Claim 1, characterized in that the hollow barrel 7 has an annular sealing surface on which the window pane 3 lies in a pressure-resistant manner.
3. Process window according to Claim 1 or 2, characterized in that the hollow barrel 7 is designed in one piece with the measurement-cell body 2 or is welded thereto.
4. Process window according to Claim 1 or 2, characterized in that the hollow barrel 7 is connected to the measurement-cell body in a pressure-resistant, detachable manner.
5. Process window according to one of Claims 1 to 4, characterized in that a ring 4 with low friction against the barrel or the window pane is present between the screw barrel 5 with external thread and the window pane 3.
6. Process window according to Claim 5, characterized in that the ring 4 consists of graphite.
7. Process window according to Claim 5, characterized in that two rings which are in sliding contact with one another are present instead of a ring 4.

8. Process window according to one of Claims 1 to 7, characterized in that the window pane 3 is extended into the pipe space or reactor space with its central region of greater wall thickness and in particular is surrounded on its periphery by a protective sleeve 23.

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9. Use of the process window according to one of Claims 1 to 8 for optical or spectroscopic process control, in particular of chemical reactions, and of mixing, conveying and separation processes.

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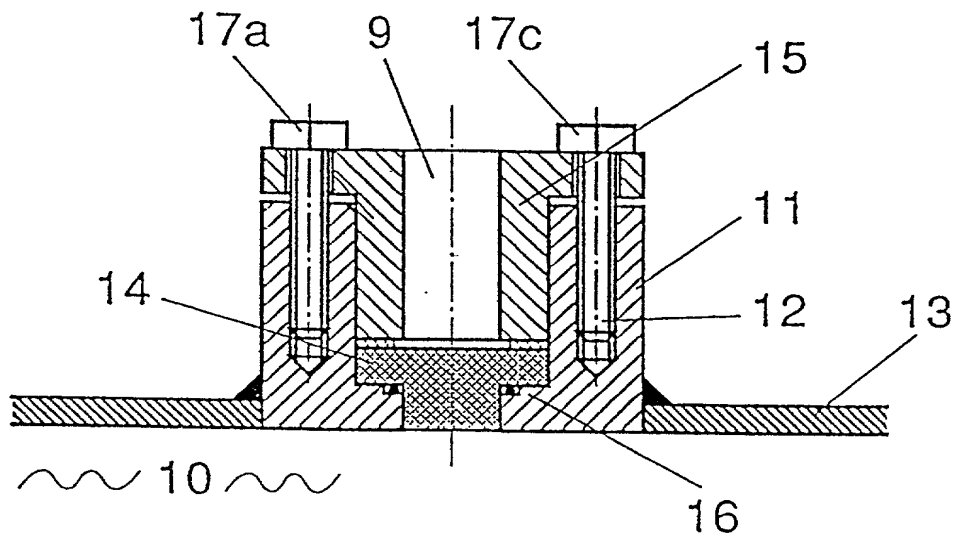


Fig. 1a

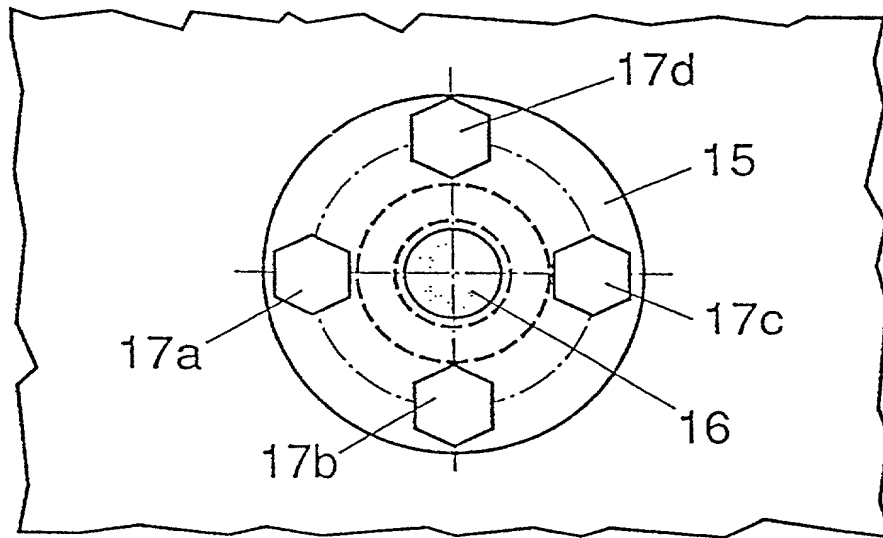
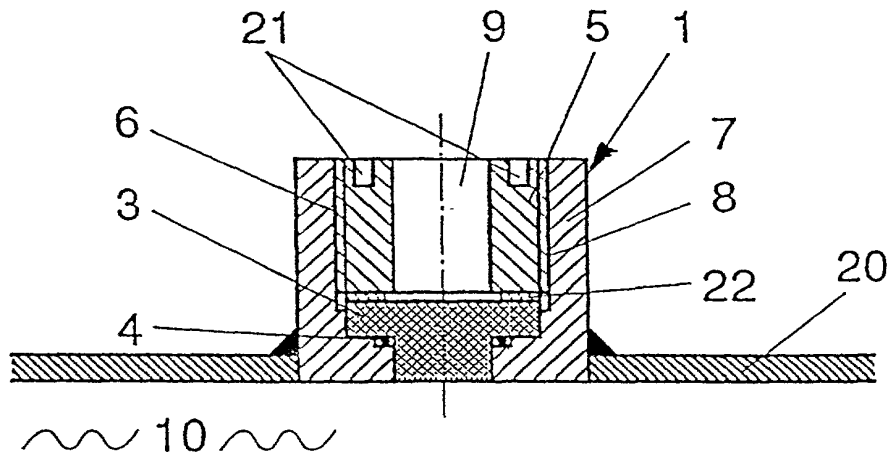
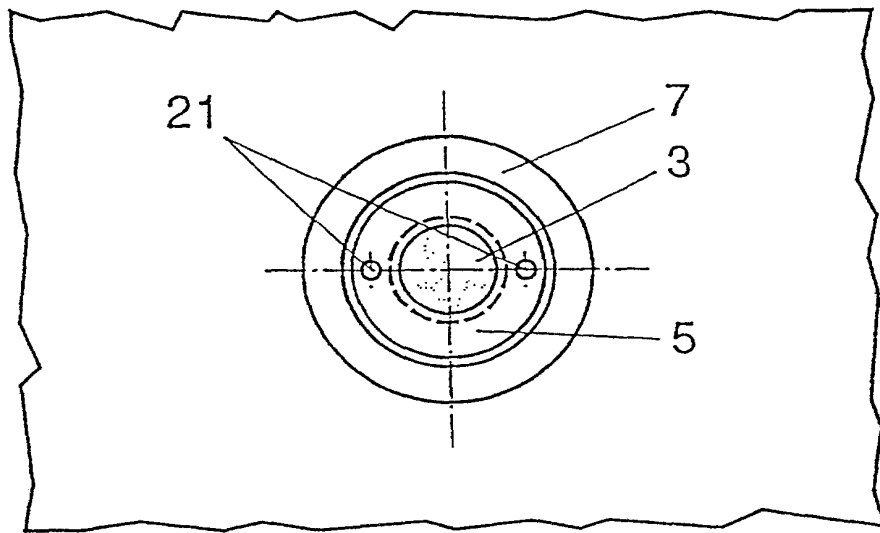
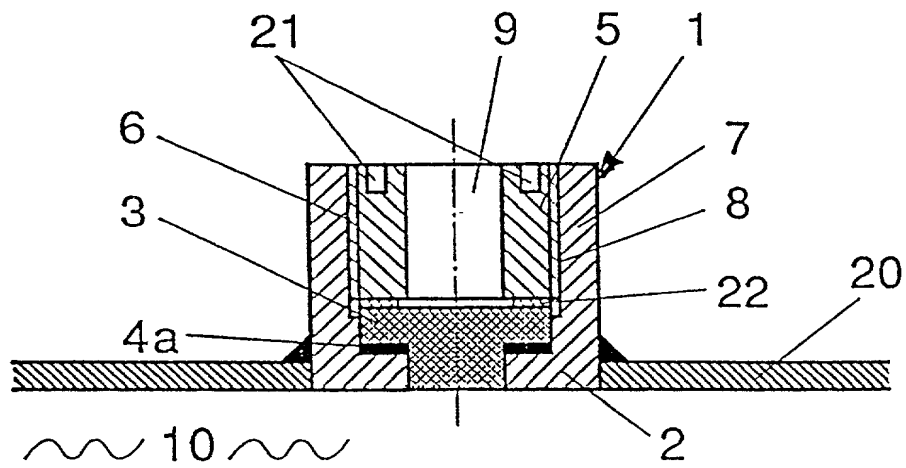
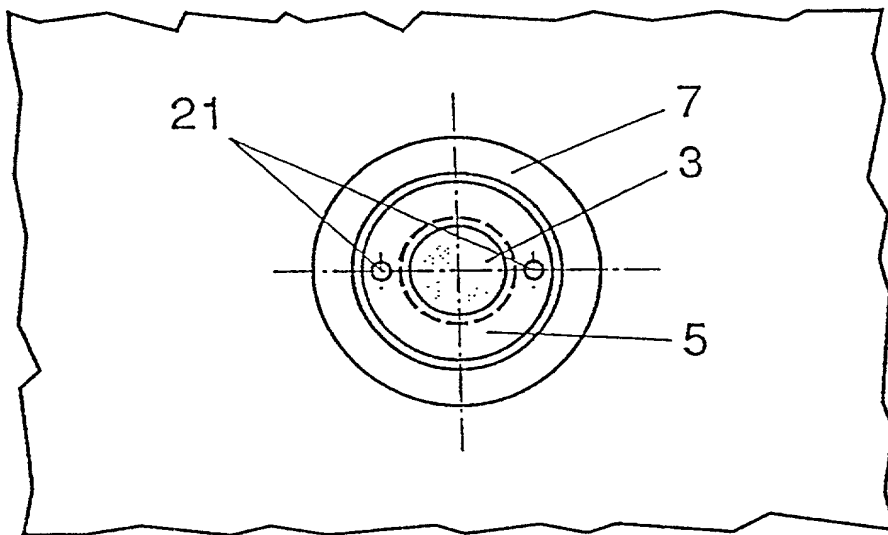


Fig. 1b

**Fig. 2a****Fig. 2b**

**Fig. 3a****Fig. 3b**



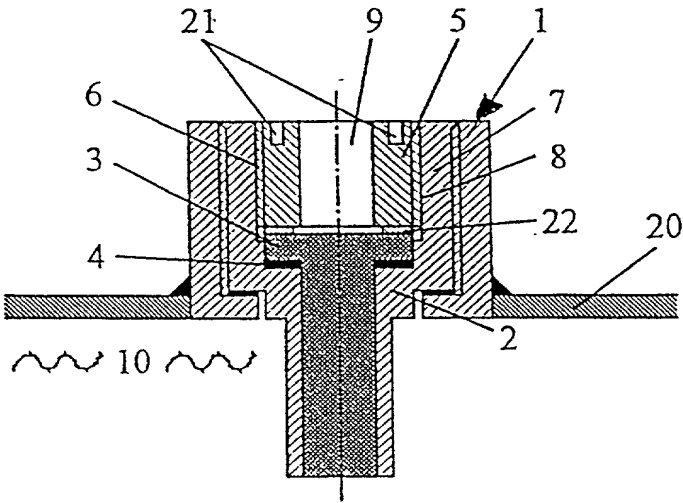


Fig. 4a

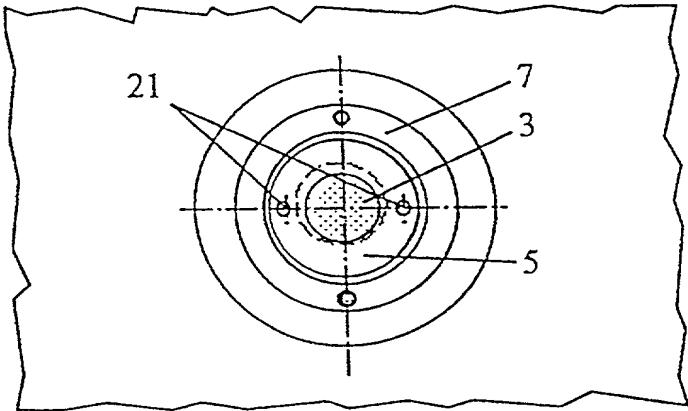


Fig. 4b

**COMBINED DECLARATION AND POWER OF ATTORNEY**

ATTORNEY DOCKET NO

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought

on the invention entitled

**PRESSURE-PROOF PROCESS WINDOW**

the specification of which is attached hereto,

or was filed on **March 14, 2000**

as a PCT Application Serial No. **PCT/EP00/02239**

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s), the priority(ies) of which is/are to be claimed:

**199 13 730.7**  
(Number)

**Germany**  
(Country)

**March 26, 1999**  
(Month/Day/Year Filed)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose the material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status)
		(patented, pending, abandoned)

(Application Serial No.)	(Filing Date)	(Status)
		(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and this application and to transact all business in the Patent and Trademark Office

JOSEPH C. GIL, Patent Office Registration Number 26,602 ARON PREIS, Patent Office Registration Number 29,426  
LYNDANNE M. WHALEN, Patent Office Registration Number 29,457 THOMAS W. ROY,  
Patent Office Registration Number 29,582 RICHARD E. L. HENDERSON, Patent Office Registration Number 31,619  
GODFRIED R. AKORLI, Patent Office Registration Number 28,779 N. DENISE BROWN, Patent Office  
Registration Number 36,097 NOLAND J. CHEUNG, Patent Office Registration Number 39,138  
DIDERICO VAN EYL, Patent Office Registration Number 38,641 CAROLYN M. SLOANE, Patent Office  
Registration Number 44,339 JAMES R. FRANKS, Patent Office Registration Number 42,552  
JACKIE ANN ZURCHER, Patent Office Registration Number 42,251  
RAYMOND J. HARMUTH, Patent Office Registration Number 33,896

all of Bayer Corporation, Pittsburgh, Pennsylvania 15205-9741

Send Correspondence To: Direct Telephone Calls To:

Patent Department

Bayer Corporation (412) 777-2349

100 Bayer Road

Pittsburgh, Pennsylvania 15205-9741

FULL NAME OF SOLE OR FIRST INVENTOR Udo Wolf		INVENTOR'S SIGNATURE <i>Udo Wolf</i>	DATE 2001-06-01
RESIDENCE D 47906 Kempen, Germany		CITIZENSHIP German	
POST OFFICE ADDRESS c/o Bayer Aktiengesellschaft, D 51368 Leverkusen, Germany			
FULL NAME OF SECOND INVENTOR Lutz Spauschus		INVENTOR'S SIGNATURE <i>Lutz Spauschus</i>	DATE 2001-06-01
RESIDENCE D 47647 Kerken, Germany		CITIZENSHIP German	
POST OFFICE ADDRESS c/o Bayer Aktiengesellschaft, D 51368 Leverkusen, Germany			
FULL NAME OF THIRD INVENTOR		INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF FOURTH INVENTOR		INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF FIFTH INVENTOR		INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF SIXTH INVENTOR		INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF SEVENTH INVENTOR		INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			